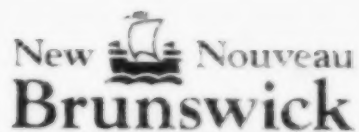


MRR 2005-2



Natural Resources
Minerals, Policy and Planning

Mineral Resource Report

NEW BRUNSWICK'S MINERAL INDUSTRY 2004

Shasta A.A. Merlini, editor

2005



Mineral Resource Report 2005-2

NEW BRUNSWICK'S MINERAL INDUSTRY 2004

ISSN 0708-1464

ISBN 1-55396-373-3

Chart & figure preparation Terry Leonard

Editing Shasta A.A. Merlini

Translation Translation Bureau, New Brunswick Department of Supply and Services.

Recommended citation

Merlini, S.A.A. 2007. New Brunswick's Mineral Industry 2004. New Brunswick Department of Natural Resources; Minerals, Policy and Planning Division, Mineral Resource Report 2005-2, 18 p.

Report prepared by

Minerals, Policy and Planning Division
Department of Natural Resources
Province of New Brunswick

Hon. Donald Arseneault
Minister of Natural Resources

July 2007

TABLE OF CONTENTS

INTRODUCTION	1
MINERAL AND HYDROCARBON PROMOTION	1
Geoscience Programs	1
Incentive Programs	4
Partnership Programs	4
Conferences	4
MINERAL EXPLORATION	5
Exploration Statistics	5
Metallic Mineral Exploration	5
Industrial Mineral Exploration	14
MINES AND QUARRIES	14
Production Statistics	14
Operating Mines	16
Suspended Operations	16
HYDROCARBON EXPLORATION AND DEVELOPMENT	17
Oil and Natural Gas Activities	17
Bituminous Shale	17
Underground Storage	17
Conferences	18
PEAT	18
Conferences / Workshops	18
Table 1. New Brunswick Mineral and Petroleum Resource Statistics, 2003 and 2004	6
Table 2. Claims recorded in New Brunswick, 1986-2004	7
Table 3. Claims in effect in New Brunswick, 1986-2004	7
Table 4. Mineral Exploration Expenditures in New Brunswick, 1986-2004	8
Table 5. Mineral Production in New Brunswick, 2003(F) and 2004(P)	15
Figure 1a. Organization chart for New Brunswick Department of Natural Resources, December 2004	ii
Figure 1b. Organization chart for the Geological Surveys Branch, December 2004	iii
Figure 1c. Organization chart for the Minerals and Petroleum Development Branch, 2004	iv
Figure 2. Highlighted exploration properties in New Brunswick, 2004	11

**NEW BRUNSWICK
DEPARTMENT OF NATURAL RESOURCES
Organizational Chart 2004**



Figure 1a. Organization chart for the New Brunswick Department of Natural Resources, 2004.

GEOLOGICAL SURVEYS BRANCH

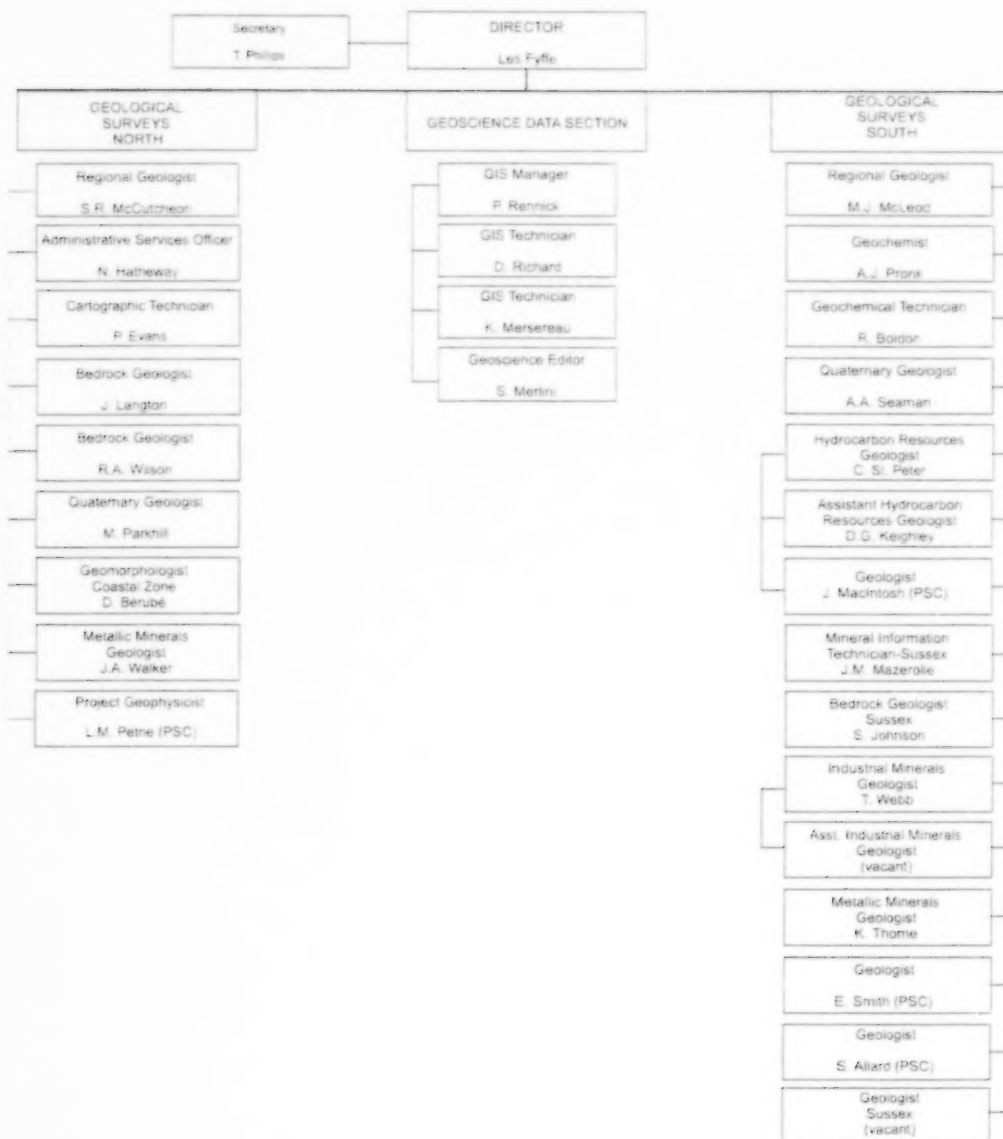


Figure 1b. Organization chart for the Geological Surveys Branch, 2004.

MINERALS & PETROLEUM DEVELOPMENT BRANCH

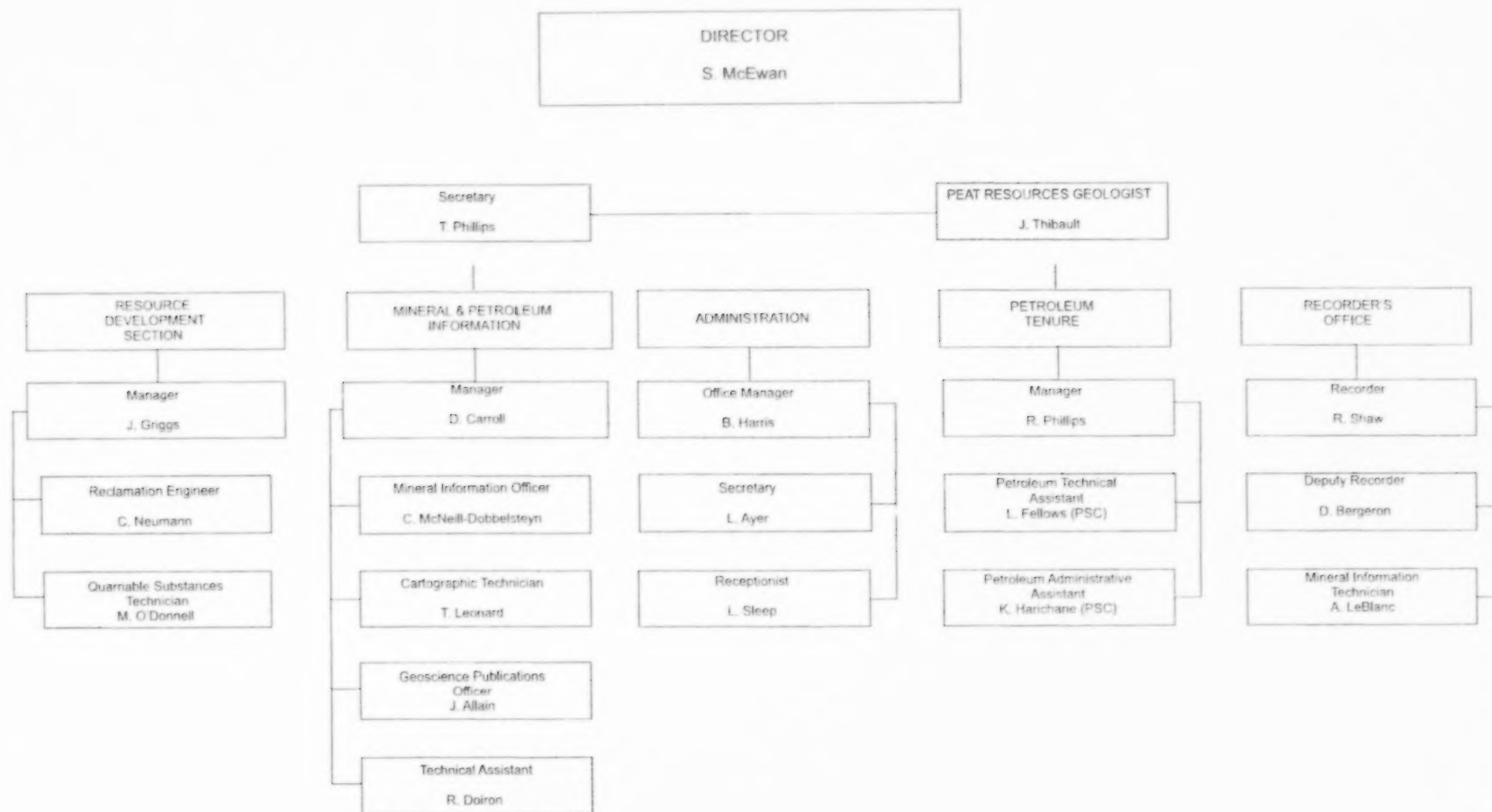


Figure 1c. Organization chart for the Minerals and Petroleum Development Branch, 2004.

NEW BRUNSWICK'S MINERAL INDUSTRY 2004

INTRODUCTION

The Minerals, Policy and Planning Division of the Department of Natural Resources consists of three branches: Geological Surveys; Minerals and Petroleum Development; and Policy and Planning. The Geological Surveys Branch (GSB) collects, interprets, and maintains a range of geoscience data. The GSB also prepares geological, geochemical, and geophysical maps and reports. This geoscience information plays a vital role in attracting mineral and hydrocarbon exploration to New Brunswick. The Minerals and Petroleum Development Branch (MPDB) administers and manages rights pertaining to the exploration, development and production of minerals, quarriable substances, oil and natural gas, bituminous shale and underground storage resources. The MPDB also distributes Geoscience information to the public through the Minerals and Petroleum Information Services Section (MPIS). These two branches have a staff of 48 with Headquarters in Fredericton and regional offices in Bathurst and Sussex. The major activities of the branch are bedrock and surficial geological mapping; studies related to metallic minerals, industrial minerals, and hydrocarbon resources; geophysical and geochemical surveys; coastal zone mapping; and the management of exploration incentive programs and services.

MINERAL AND HYDROCARBON PROMOTION

Geoscience Programs

Bedrock Geological Mapping

Bedrock mapping of the McCormack Lake (NTS 21 O/10b) and Ten Mile Pool (NTS 21 O/10c) areas in northern New Brunswick was completed at 1:20 000 scale.

A geological report on the Dalhousie Group in the Campbellton area was published in *Geological Investigations in New Brunswick for 2004* as part of the federal-provincial NATMAP program in northern New Brunswick.

A NATMAP geological compilation of the Matane – Restigouche area, Québec – New Brunswick (scale 1:125 000) was released by the Geological Survey of Canada as Open File 4628.

Thirty bedrock maps of the Caledonian Highlands in southern New Brunswick were published at 1:20 000 scale.

The results of a joint mapping project with Acadia University in the southwestern part of the New River Terrence was published in *Geological Investigations in New Brunswick for 2004*.

Surficial Geological Mapping and Geochemical Surveys

Till samples were collected in the Hayesville (NTS 21 J/10), Pointe Verte (NTS 21 P/13), and parts of Sainte-Anne-de-Madawaska (NTS 21 N/1), Connors (NTS 21 N/2), Little Black River (NTS 21 N/3), Escourt (NTS 21 N/6), Lac-Baker (NTS 21 N/7), Edmundston (NTS 21 N/8), Grandmaison (NTS 21 N/9), Wild Goose Lake (NTS 21 N/16), Grand Falls (NTS 21 O/4), and Grand River (NTS 21 O/5).

Till geochemistry contour maps of the McAdam (NTS 21 G/11), Forest City (NTS 21 G/12), Fosterville (NTS 21 G/13), Millville (NTS 21 J/3) and Woodstock (NTS 21 J/4) areas were completed..

Till pebble lithology for the Coldstream Map area (NTS 21 J/6) was determined under a joint project with UNB.

Coastal Erosion Studies

Beach erosion monitoring was done at all 10 permanent sites in the New Brunswick monitoring network, two new sites were added and the data were incorporated into the "NB Beach Profile Database".

Three sets of historical air photos were digitized to illustrate the storm-damage effects to the seawall in the Village of Charlo.

Peatland 530 was surveyed (MP 2004-150) to determine its coastal erosion/flooding potential.

Coastal habitat mapping of the Shemogue and Cap-Pelé areas was undertaken as part of the three-year, federal-provincial project on the "Impacts of sea-level rise on the coastal zone of southeastern New Brunswick".

Coastal erosion maps of the Tracadie and Rivière-du-Portage areas were released in 2004 (MP 2004-12A, -12 B, -13A, -13 B).

Metallic Minerals

A geological description of the Gilmour Brook deposit, located in the southeastern part of the Bathurst Mining Camp, was published in *Geological Investigations in New Brunswick for 2004*.

Field work on the Benjamin River apatite showing was completed.

Field work is being undertaken to classify the types of gold occurrences in the Annidale Belt of southern New Brunswick.

On-going joint projects with UNB include field and laboratory work on VMS deposits in the Bathurst Mining Camp, on the Elmtree, Devil Pike Brook, and Cape Spencer gold occurrences, on the Lake George antimony Mine, and on the McKenzie Gulch copper skarns.

The petrology and PGE mineralization of the Mechanics Settlement pluton is being examined under a joint project with Acadia University.

Hydrocarbon Resources

Bedrock mapping was undertaken jointly with UNB in the Hillsborough, Indian Mountain, and Millstream areas of southern New Brunswick.

A structural synthesis of the Carboniferous Moncton Subbasin in southeastern New Brunswick was published in *Geological Investigations in New Brunswick for 2004* as part of a joint project with UNB.

An organic matter maturation database for the Maritimes Basin of southeastern New Brunswick (NTS 21 H/14, H/15, I/2, I/3) was prepared as part of a federal-provincial TGI-2 program.

A palynological database was compiled for Upper Devonian-Carboniferous strata of southeastern New Brunswick (NTS 21 H/10, H/15, H/16, I/1, I/2; 11 L/4).

Industrial Minerals

A survey of decorative pebble, cobble and boulder resources from selected Crown Lands in New Brunswick was prepared and published as Open File 2004-1.

A survey of potential flagstone resources in Central and East-Central New Brunswick was prepared and published as Open File 2004-3.

A preliminary survey of Crown land slate resources in northwestern New Brunswick was published as Open File 2005-1.

A report on the geotechnical properties of bedrock in the Belledune area of northern New Brunswick was published in Geological Investigations in New Brunswick for 2004.

A report on tidewater export opportunities for bedrock aggregate in northern New Brunswick has been prepared.

A granular aggregate database was compiled in CARIS and MS Access format.

Geophysical Surveys

A high-resolution aeromagnetic survey was flown in the Marriown area (NTS 21 H/5, H/6, H/11, H/12, H/13, H/14, I/3, I/4) of southern New Brunswick as part of the federal-provincial TGI-2 program.

A high-resolution gravity survey was conducted jointly with Acadia University over granite plutons in the Clarence Stream area of southwestern New Brunswick. Results were published in OF 2004-4.

A seismic survey of the Vinegar Hill silica deposit near Sussex was conducted jointly by the Geological Survey of Canada and UNB.

A Hydro-Quebec high-resolution aeromagnetic survey was extended from Gaspé into the Campbellton-Charlo area of northern New Brunswick.

Digital aeromagnetic data from northeastern New Brunswick were compiled into a draft geophysical map at 1:250 000 scale.

Geoscience Information Systems

Revision of geological compilation maps (scale 1:50 000) for southern New Brunswick (NTS B, G, H) was in progress.

Eight 1:20 000 scale maps were compiled in NTS 21 G/2, G/8, G/9, H/12, and B/15.

Descriptions of bedrock units were compiled into a Bedrock Nomenclature of New Brunswick database.

The fossil database for the southern part of New Brunswick was populated.

Drill-hole and trench locations were compiled for southern New Brunswick.

Claims and assessment report information was entered into CARST system and made available online.

Publications

In 2004, 13 geoscience and technical reports, and 180 map plates were published.

Incentive Programs

The New Brunswick Advanced Exploration Program, established in 2003, provides up to \$2.5 million annually over five years to fund exploration for deeply buried base-metal deposits in the Bathurst Mining Camp. Under this program, Noranda Inc. in partnership with junior mining company SLAM Exploration Ltd conducted regional airborne electromagnetic and gravity surveys over much of the Bathurst Mining Camp during late 2003 and early 2004. The airborne surveys included approximately 22 400 line-kilometres of MegaTEM and 15 200 line-kilometres of Airborne (FTG) Gravity. Initial MegaTEM results have identified approximately 100 anomalies that are being drill-tested for base-metal sulphides.

The New Brunswick Prospector Assistance Program (NBPA) provided financial assistance totalling \$206 650 to 20 prospectors involved with grass-roots exploration and 21 in advanced mineral exploration. Nine prospectors were awarded funding to attend the Western Roundup in Vancouver and Prospectors and Developers Convention in Toronto.

Prospecting courses given in Dalhousie, Saint John, and Fredericton were attended by a total of 45 participants.

The New Brunswick Junior Mining Assistance Program (NBMAP) provided financial assistance totalling \$346 733 to ten junior mining companies conducting exploration in New Brunswick.

Partnership Programs

During 2004, NBDNR partnered with the University of New Brunswick on seven projects: remote sensing in northwestern New Brunswick; structural and geochemical controls on gold mineralization in northern New Brunswick; volcanic architecture of the Nepisiguit Falls Formation in the Bathurst Mining Camp; rare-earth-elements in massive sulphides of the Bathurst Mining Camp; the McKenzie Gulch base-metal skarn system; the Devil Pike Brook gold occurrence in the Annidale Belt of southern NB; petroleum assessment of the Carboniferous Maritimes Basin; and pebble lithology counts in the Coldstream area of central New Brunswick

NBDNR partnered with Acadia University in a bedrock mapping and age-dating project in the New River Belt of southern New Brunswick.

An aeromagnetic survey was flown in southern New Brunswick and an organic matter maturation database created for southeastern New Brunswick as part of the federal-provincial TGI-2 program.

Conferences

Annual Review of Activities

The 29th Annual Review of Activities, which was held November 7-9, 2004, was attended by 295 delegates. The Annual Review entitled *Exploration and Mining New Brunswick 2004* is a cooperative effort between NBDNR, the New Brunswick Prospectors and Developers Association, and the NB Branch of the Canadian Institute of Mining, Metallurgy and Petroleum. The conference included an Exploration Session in which David Comba, CIM Distinguished Lecturer, spoke on "Super Flow Through Program"; a Mining Session in which Dave Plante of the New Brunswick Mining Association presented a talk entitled "Enter the Dragon"; a General Session in which Peter Dimmell, President of the PDAC, presented a talk entitled "Overview of Map Staking Issues in Canada; a Technical Session

that covered field work by Geological Surveys Branch and by Noranda on the Bathurst Mining Camp; and a Prospectors' Exchange where prospectors and junior mining company geologists displayed rock samples and core from their mineral showings in New Brunswick.

Western Roundup (Vancouver, BC)

Four staff and the Assistant Deputy Minister attended the Western Roundup in Vancouver in January.

PDAC Convention (Toronto, ON)

Five staff, the Minister, and the ADM attended the Prospectors and Developers Convention in Toronto in March.

MINERAL EXPLORATION

Exploration Statistics

Claims statistics collected by the New Brunswick Department of Natural Resources (Table 1) indicates that claim-staking activity more than doubled in 2004 (Table 2) and the number of claims in effect at year's end (Table 3) had increased about 32%. The number of claims in effect in northern New Brunswick increased about 45% to 14 407 and the number in the southern part of the province decreased 2.7% to 3504. The north reported a 123% increase in claims recorded (5609) and the south reported a 90% increase (817). In addition, exploration permits for two areas in northern New Brunswick, totalling 4938 claim equivalents, were granted.

For all of New Brunswick, the actual exploration expenditure (Natural Resources Canada survey) for 2003 was \$ 2 552 100 (general and mine site exploration, including overhead); the actual for 2004 was \$13 377 300. In 2004, most of the expenditure (Table 4) was focused on base metals in the Bathurst Mining Camp and gold, potash, and hydrocarbons in southern New Brunswick. Expenditures were the result of exploration by junior and major mining companies and prospectors.

Metallic Mineral Exploration

During 2004, the main focus of exploration programs conducted by junior mining companies and prospectors in New Brunswick was on gold in several geological settings, including intrusion-related and structurally related environments. The main intrusion-related gold systems investigated, which are mostly associated within Siluro-Devonian felsic intrusions, include those in the vicinity of Clarence Stream northeast of St. Stephen and in the Poplar Mountain area west of Fredericton. Gold mineralization associated with mafic intrusions is being explored at Elmtree and Ramsay Brook to the northwest and west of Bathurst, respectively.

Structurally related gold environments explored include deposits formed within an extensive, Late Carboniferous to Permian, northeast-trending thrust/fold belt in the Cape Spencer area south of Saint John. In addition, gold-bearing environments associated with late (mid Carboniferous?), north- and northwest-trending fault zones have been identified in the Oak Bay and Pokiok areas, east of St. Stephen and west of Fredericton, respectively.

Table 1. New Brunswick Mineral and Petroleum Resource Statistics, 2003 and 2004

Exploration Summary	2003		2004	
	Work Reported	Value (\$)	Work Reported	Value (\$)
<i>Mining Act</i>				
Reports of Work (RW)	111 reports	1 968 749+†	169	4 603 991
Drilling Reported in RW	107 holes (13 295 m)	840 776	177 holes (13 785 m)	1 121 295
Potash Exploration	-	0	n/a	n/a
<i>Oil and Natural Gas Act</i>	geophysics	2 000 000	geophysics well 2560 m	150 576 3 746 322†
<i>Bituminous Shale Act</i>	-	0	-	0
<i>Underground Storage Act</i>	-	0	-	0

Mineral and Petroleum Resource Allocation (total in effect at year's end unless specified for the year)	2003		2004	
	Number	Hectares	Number	Hectares
<i>Mining Act</i>				
Prospecting Licences Issued (year)	54	-	95	-
Claims Recorded (year)	2 936	46 976	6 426	102 816
Claims Expired (year)	2 500	40 000	2 018	32 288
Claims in Effect	13 493	215 888	17 911	286 576
Coal Agreements	1	n/a	1	n/a
Potash Exploration Agreements	2	20 000	2	20 000
Potash Leases	2	20 024.2	2	20 024.2
Mining Leases	17	12 691	17	12 691
<i>Oil and Natural Gas Act</i>				
Licences to Search	28	571 286.3	34	596 448.5
Leases	12	15 434.9	12	15 434.9
<i>Bituminous Shale Act</i>				
Licences to Search	0	0	0	0
Development Permits	0	0	0	0
Leases	0	0	0	0
<i>Underground Storage Act</i>				
Storage Exploration Licences	8	43 855.3	8	43 855.3
Storage Leases	0	0	0	0
Construction Permits	0	0	0	0
<i>Quarriable Substances Act</i>				
Quarry Permits	255	-	251	-
Quarry Leases	15	525.55	16	555
Peat Exploration Licences	5	1 534	4	1 441
Peat Leases	39	16 373.5	43	17 463.2

+ includes expenditures from current and previous years
 * licenced depth
 † value at time of printing (final figure not available)
 n/a not available

January, 2005

TABLE 2. CLAIMS RECORDED IN NEW BRUNSWICK

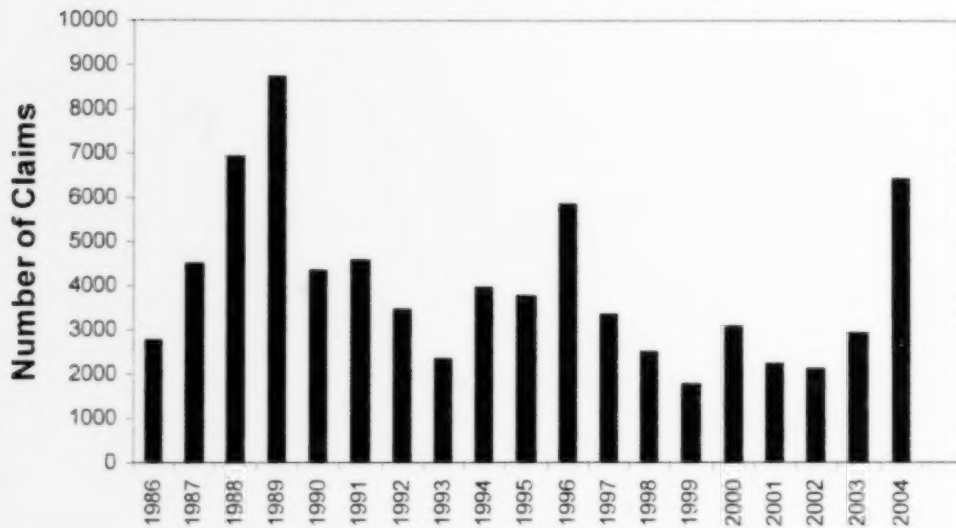


TABLE 3. CLAIMS IN EFFECT IN NEW BRUNSWICK

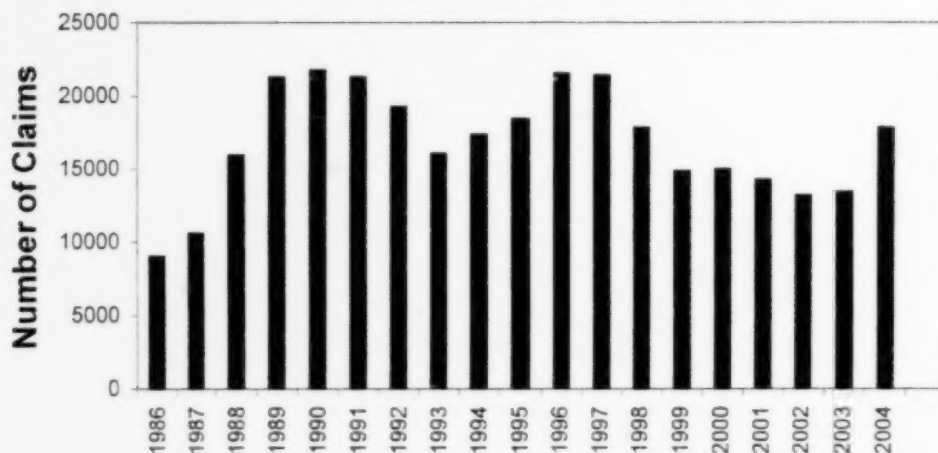
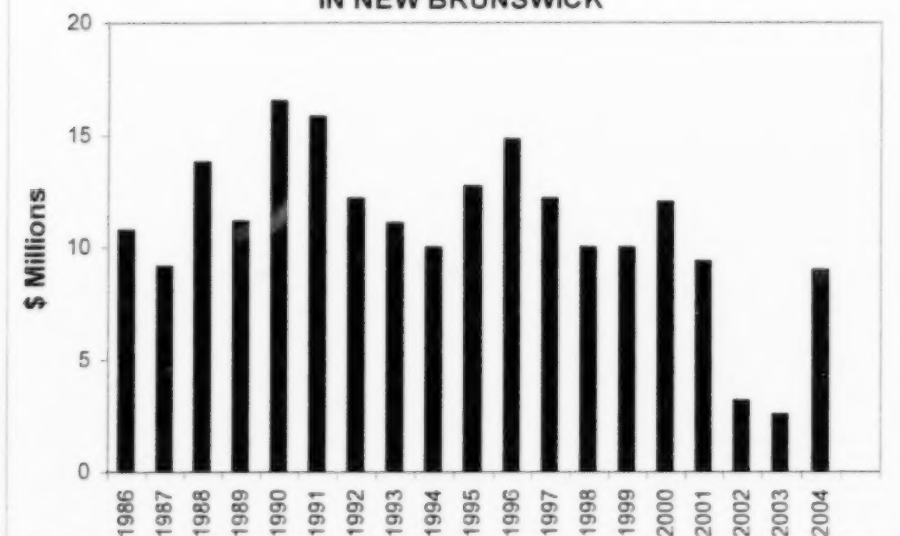


**TABLE 4. MINERAL EXPLORATION EXPENDITURES
IN NEW BRUNSWICK**



Concrete evidence for the presence of high-sulphidation auriferous systems was found this year in Neoproterozoic rocks of the Caledonia Belt at Chambers Settlement, south of Sussex. Although this occurrence has not been fully evaluated to date and may not be economic, the presence of numerous occurrences and economic deposits of this type in broadly similar Neoproterozoic rocks elsewhere (e.g., Newfoundland and South Carolina) highlights the importance of this discovery and the gold potential of the Caledonia Belt in general.

A major exploration program funded in part by the Province of New Brunswick has commenced in the Bathurst Mining Camp in an effort to find reserves of base metals to supply ore to the smelter at Belledune following the expected closure of Brunswick Mine in a few years. Under this program, Noranda Inc. and its joint-venture partner are applying new technology to explore for deeply buried deposits in the region. The Chester deposit in the southwestern part of the Bathurst Camp and the Nash Creek deposit hosted by Devonian volcanic rocks northwest of Bathurst are also being actively explored for base metals this year.

Precious Metals

Freewest Resources Canada Inc. has spearheaded the exploration efforts in the Clarence Stream area of southwestern New Brunswick again this year [Figure 2: 13]. A total mineral inventory of 252 395 ounces of gold has been established at Clarence Stream to date. The proposed continuity between the AD and MW zones along a shallowly folded thrust structure was verified by a 19-hole drilling program to further test the potential in the Anomaly A group of deposits on the northern part of the property. Also, it was established that the 93 Zone to the south is controlled by the same first-order structure. Many ore shoots in the Anomaly A area and elsewhere on the property remain open at depth and along strike, indicating excellent potential for sizeable, medium- to high-grade, economic gold deposits.

Freewest Resources Canada Inc. also optioned the Oak Bay property in southwestern New Brunswick from prospector Kim Reeder [Figure 2: 20]. Trenching revealed gabbroic intrusions and alteration zones associated with late north- and northwest-trending faults. Prior to trenching, numerous mineralized float samples were discovered yielding up to 17.49 g/t Au. A diamond drill hole program has begun to test the continuity of these mineralized zones.

Further evidence for significant mineralization along these structural trends was found on the Pokiok property [Figure 2: 21] held by Darryl Marr, where quartz/carbonate vein systems returned numerous high values of up to 4.53 g/t Au with significant silver. Vein systems and locally well developed, pervasive alteration occurs over an area in excess of 600 m wide, and appears to follow the associated fault zone for a distance of about 4 kilometres.

Union Gold Inc., conducted a drilling program on its Birney Lake claims, southwest of Freewest's Clarence Stream property [Figure 2: 14]. Five holes were drilled and intersected favourable geology but low gold values. Sampling by Dave Stevens on his nearby Lilly Hill claims [Figure 2: 15] returned up to 18.6 g/t Au from subcrop.

Murgor Resources Inc. delineated new targets on their Mount Pleasant claims to the northeast of Freewest's Clarence Stream property. An extensive geophysical/geochemical survey by [Figure 2: 16], and trenching by Ken Whaley on a new claim group near Back Clarendon [Figure 2: 17] further along strike yielded several high values in grab samples of up to 19.46 g/t Au.

First Narrows Resources Corp., optioned the Golden Ridge property in west – central New Brunswick [Figure 2: 18] from **Freewest Resources Canada Inc.** A 9 hole drilling program in the vicinity of Poplar Mountain continued the investigation of this extensive, volcanic-hosted alteration zone with high potential for a very large, low-grade type of intrusion-related deposit. Intersections in hole GR-04-15 included 1.61 g/t Au over 26.83 m and numerous narrower, but higher grade intervals (press release dated May 7, 2004). Significantly, gold mineralization was also discovered this year in Ordovician metasedimentary rocks (3.36 g/t Au over 2.0 m) that surround the volcanic complex indicating that potentially economic gold mineralization is likely much more widespread than anticipated. It now appears that the mineralized zone is about 800 m in width by 4 km in length.

First Narrows Resources Corp. reported results from a 5-hole drilling campaign, totalling about 500 m, on its Middle River [Figure 2: 5] gold property, located approximately 18 km west of Bathurst. Hole MR-03-01 intersected 9.95 m grading 2.35 g/t Au, including 2.7 m grading 5.42 g/t, and hole MR-03-03 cut 17.6 m grading 3.41 g/t Au plus 4.7 m grading 7.49 g/t (press release dated February 11th, 2004).

Geodex Minerals Ltd. continued work on their Armstrong Brook property [Figure 2: 19] in the Cape Spencer area, which includes the Cape Spencer open pit gold mine (past producer). The company carried out extensive geochemical and geophysical surveys, trenching, and a 25-hole drilling program on new and several previously recognized mineralized zones associated with east- and northeast-trending strike-slip and thrust faults. Results from the drilling program, such as 7.89 g/t Au over 7.4 m at the B Zone (new zone) and 3.6 g/t Au over 5.0 m at the Birches Zone (previously recognized), were very encouraging. Of particular interest was the recognition of a silica cap with high-grade feeder veins at the open pit that is very similar to a very large silica zone north of this locality, as yet untested by drilling.

Geodex Minerals Ltd. also optioned of the Chambers Settlement property in southwestern New Brunswick [Figure 2: 23] from prospector Douglas Stewart and Pro-Max Resources that covers the newly recognized high-sulphidation gold system discussed above. Initial sampling has returned highly anomalous gold values from within an extensive alteration and quartz-veined zone several tens of

Legend for individual properties, Figure 2

- 1 Nash Creek Claims (SLAM Exploration Ltd.)
- 2 Caribou Mine Mining Lease 246 (CanZinco Ltd.)
- 3 Restigouche Mine Mining Lease 255 (CanZinco Ltd.)
- 4 CNE Claims (Stratabound Minerals Corp.; Eastmain Resources Inc.)
- 5 Middle River Claims (Earnest Brooks)
- 6 Chester Claims (Teck Exploration Ltd.)
- 7 Fall's Grid Claims (Acadian Gold Corporation)
- 8 Ann's Creek Claims (Merton Stewart)
- 9 Malachite Claims (Montoro Resources Inc.)
- 10 Murray Group Claims (Stratabound Minerals Corp.)
- 11 Elmtree Claims (George Murphy)
- 12 Big Pit Claims (Log House Construction Ltd.; Exploration Puma Inc.)
- 13 Clarence Stream Claims (Freewest Resources Canada Inc.)
- 14 Birney Lake Claims (Union Gold Inc.)
- 15 Lilly Hill Claims (Dave Stevens)
- 16 Mount Pleasant Claims (Murgor Resources Inc.)
- 17 Back Clarendon Claims (Fundy Minerals Ltd.)
- 18 Poplar Mountain Claims (Freewest Resources Canada Inc.)
- 19 Armstrong Brook Claims (Geodex Minerals Ltd.)
- 20 Oak Bay Claims (Kimberly Reeder); Oak Bay South Claims (Freewest Resources Canada Inc.)
- 21 Pokiok Claims (Darryl P. Marr)
- 22 Marrtown Claims (William Carter and Cyril Beaman)
- 23 Chambers Settlement Claims (Pro-Max Resources Inc.)
- 24 Annidale Claims (Geodex Minerals Ltd.)
- 25 Sisson Brook Claims (Champlain Resources Inc.)
- 26 St. Stephen Claims (Abitex Resources Inc.)
- 27 TerrAtlantic Engineering Limited, proposed study area of Crown land slate resources, Madawaska and Restigouche counties,
- 28 Ketepec Claims (Ketepec Development Ltd.)
- 29 Potash Corporation of Saskatchewan Inc. (NB Division), 3-D Seismic Survey
- 30 Cassidy Lake Mining Lease 241 (Atlantic Silica Inc.)
- 31 Potash Corporation of Saskatchewan Inc., Oil and natural gas licence to search
- 32 Corridor Resources Inc., Underground storage exploration licence
- 33 Intragas Energy, LP, Underground storage exploration licences
- 34 Jean Mariadassou, Oil and natural gas licence to search
- 35 Corridor Resources Inc., Oil and natural gas licences to search
- 36 Corridor Resources Inc. and Potash Corporation of Saskatchewan Inc., Oil and natural gas licence to search
- 37 Columbia Natural Resources Canada, Ltd., Oil and natural gas licences to search and leases
- 38 Corridor Resources Inc. and Columbia Natural Resources Canada, Ltd., Oil and natural gas licences to search
- 39 Norton Energy Inc., Oil and natural gas licence to search
- 40 Corridor Resources Inc. and Globex Resources Ltd., Oil and natural gas licence to search
- 41 J.A. Seglund Inc., Oil and natural gas leases
- 42 RHT Enterprises Ltd., Oil and natural gas lease
- 43 Irving Oil Limited, Oil and natural gas lease
- 44 Contact Exploration Inc., Oil and natural gas licences to search
- 45 PetroWorth Resources Inc., Oil and natural gas licence to search

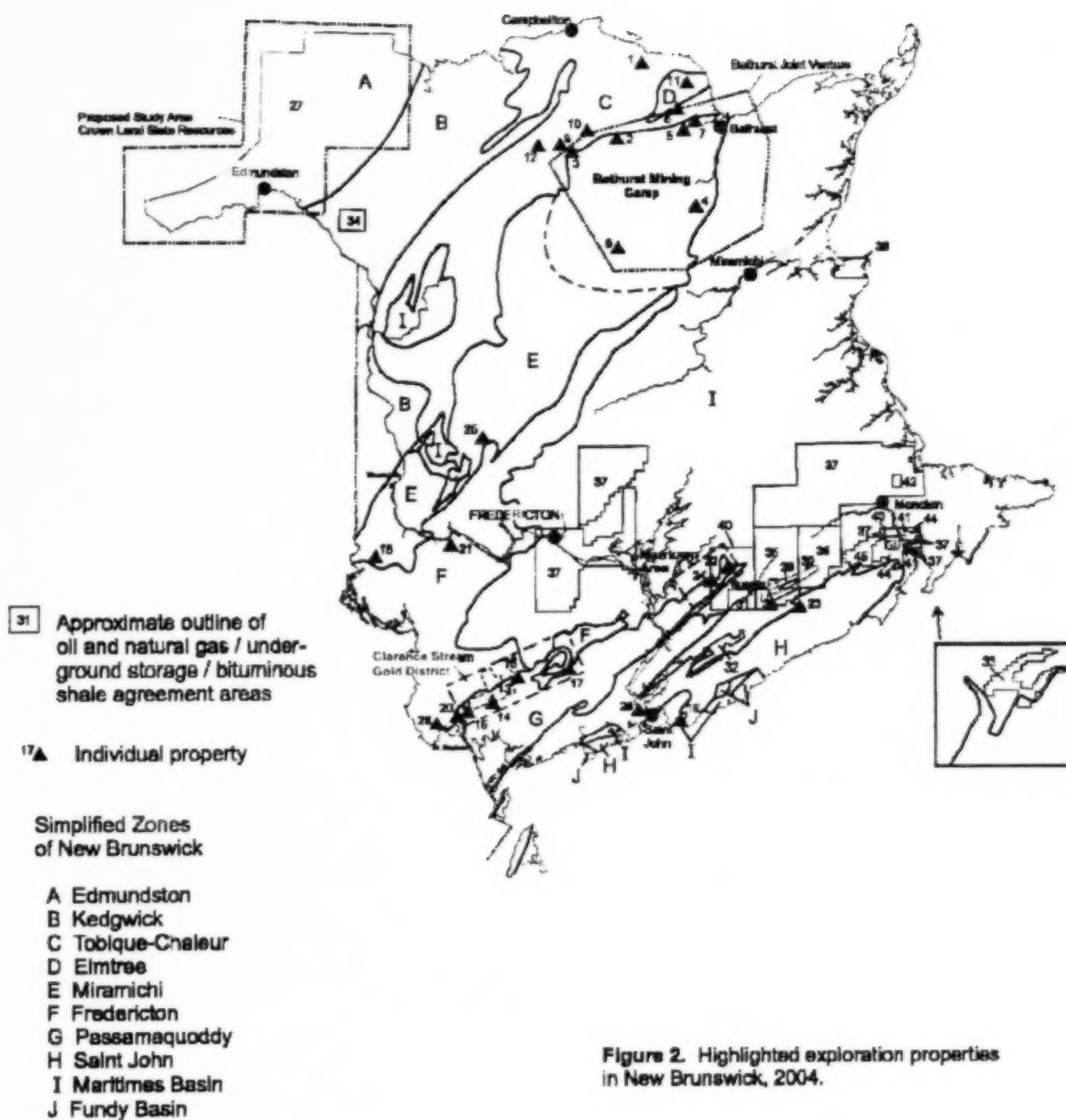


Figure 2. Highlighted exploration properties in New Brunswick, 2004.

metres wide that extends at least 2 km along strike. Geodex has also staked portions of the metal-rich Annidale Belt [Figure 2: 24] north of Sussex that hosts numerous high-grade gold showings associated with terrane-bounding, northeast-trending structures. In addition, the company has acquired the Sisson Brook property [Figure 2: 25] north of Fredericton that hosts extensive zones of polymetallic mineralization (W, Mo, Ag, base-metal sulphides and Au) apparently related to nearby felsic intrusions of Devonian age.

Prospectors William Carter and Cyril Beaman continued to evaluate the gold and copper potential of the Marrtown area [Figure 2: 22] north of Sussex, where high-grade gold was discovered in 2001 by Emilio Doiron, again associated with north- and northwest-trending faults. Geochemical surveys have further refined targets for future work in this area.

Acadian Gold Corporation drilled eleven shallow holes early in the year near the Noel-Willett gold discovery (2003) in the Tetagouche Falls area [Figure 2: 7] about 12 km west of Bathurst. Previous grab samples of silicified breccia from the property graded up to 49 g/t Au. The drilling showed that the mineralized zone trends northwesterly across the tectonic fabric and is probably intrusion-related, although no intrusive rocks were encountered. The best intersection was in hole TP-04-07, which cut eight metres of over 2 g/t gold. Other holes include intersections of up to 52.5 m grading 0.41 g/t gold, 13.6 m grading 1.52 g/t gold and 4.6 m grading 2.54 g/t gold in altered basalt. Additional drilling on the property began in the late fall but no results had been reported before year end.

Aurogin Resources Ltd. plans to conduct an airborne survey (EM and Magnetic) in the Rocky Brook – Millstream area, northwest of Bathurst, before year end. The purpose is to delineate structures and intrusions in the vicinity of the Nicolas Denys Granodiorite, which could host gold mineralization. At the time of writing, the survey had commenced. A local prospector, Merton Stewart, assayed a quartz boulder from the contact aureole of this intrusion [Figure 2: 8], which yielded bonanza-grade gold (over 2500 g/t).

Stratabound Minerals Corp. conducted an IP survey on its Ramsay Brook gold property, now regrouped into the Murray Group [Figure 2: 10], located 75 km west of Bathurst. Two broad chargeability anomalies were identified, which will require drilling because trenching failed to reach bedrock although altered float containing up to 3420 ppm As, 128 ppm Sb and 72 ppb Au was encountered. Late in the year, the company also carried out a trenching and sampling program at its Elmtree [Figure 2: 11] gold property, located 19 km northwest of Bathurst. This trenching followed a re-evaluation of existing data, which began much earlier in the year (see press release dated February 5, 2004) and focused on calculating wall-to-wall composite-assays on the West Gabbro Zone from drilling that was done by Lacana in the 1980s. The best gold intersection was 2.4 g/t over 23.5 m in Trench 1, including intervals grading 4.37 g/t over 11.5 m and 7.76 g/t over 5.0 m (press release dated January 13, 2005).

Exploration Puma Inc., a subsidiary of **Ressources Appalachés Inc.**, drilled four shallow holes on its Big Pit [Figure 2: 12] gold property, located about 75 km west of Bathurst. The best intersection was in hole F04-01, where a 2.0 m interval graded 1.57 g/t Au, including 0.8 m that ran 3.28 g/t Au (press release dated July 6, 2004). The mineralization extends over a distance of 100 metres and is associated with hematite-bearing veins in altered Devonian basalt. A splay of the Rocky Brook – Millstream Fault lies immediately to the east of the mineralized zone.

Base Metals

Noranda Inc. and **SLAM Exploration Ltd.**, a junior mining company based in Miramichi, carried out the first phase of their five-year Bathurst Joint Venture (BJV) in the Bathurst Mining Camp in the

winter of 2004. The major part of this three-year exploration program consisted of about 22 400 line-kilometres of airborne electromagnetics (MegaTEM) and 15 200 line-kilometres of airborne gravity (FTG). Over 300 MegaTEM anomalies were identified for ground follow-up, which began in the spring. By late October, 38 targets had been drill-tested at depths ranging from 50 to 150 m but no economic grade mineralization was intersected in any of the holes. However, drilling continues and the program calls for up to 28 000 m by the end of the fiscal year. The Bathurst Joint Venture [see Figure 2] includes 6309 mineral claims and 4938 claim equivalents, which cover over 182 000 hectares of highly prospective volcanic and sedimentary rocks in the Bathurst Mining Camp.

SLAM Exploration Ltd. also carried out exploration, independent of the BJV, on its Nash Creek property [Figure 2: 1], located 45 km northwest of Bathurst. Approximately 272 line-kilometres of MegaTEM and 157 line-kilometres of FTG were flown. Follow-up drilling of anomalies began in the fall and the results from the first three holes were reported in December. Hole NC-04-01 intersected 9.0 m of 9.33% Zn and four other intervals ranging from 1.0 to 2.5 m and 9.16% to 9.65% Zn. Hole NC-04-02 cut 15.0 m of 11.07% Zn, whereas hole NC-04-03 cut 6.8 m of 9.99% Zn (press release dated December 15th, 2004).

Breakwater Resources Ltd. and its wholly-owned subsidiary **CanZinco Ltd.** announced (press release dated October 8, 2004) that a letter of intent had been signed to sell its Caribou [Figure 2: 2] and Restigouche [Figure 2: 3] mines to **Blue Note Metals Inc.**, a wholly-owned subsidiary of **Forest Gate Resources Inc.** Earlier in the year Breakwater drilled three short holes on satellite properties to its Caribou Mine but no results have been released. It also entered an agreement with BIOTEQ Environmental Technologies Inc. for mine dewatering and water treatment services at Caribou and Restigouche, as well as general site management.

Eastmain Resources Inc. conducted a five-hole, 1300-m drilling program on its CNE property [Figure 2: 4] early this summer. CNE is located about 35 km southwest of Bathurst and is under option from **Stratabound Minerals Corp.** The holes were collared to test IP geophysical targets on various parts of the property. No results have been released.

First Narrows Resources Corp. began a drilling program on the "Western Deeps Extension" of the Chester copper deposit, located in the southwestern part of the Bathurst Mining Camp [Figure 2: 6]; the property is under option from Tack Exploration Ltd. In addition 665 line-kilometres of helicopter-borne VTEM surveying were flown on adjacent claims to the northwest to better delineate MegaTEM anomalies. Two drill holes, CNW-04-01 and CNW-04-02, intersected a new sulphide zone on one of these MegaTEM anomalies (press release dated December 16th, 2004). Assay results are pending.

Abitex Resources Inc. has acquired the St. Stephen Ni-Co-Cu property [Figure 2: 26] immediately north of St. Stephen in southwestern New Brunswick. The company conducted a detailed, deep-penetrating, VTEM survey and metallurgical testing utilizing bacterial leach this year. Strong conductors over known bodies and several new targets were delineated by the geophysical survey, and leaching tests were very positive resulting in 90% Ni and Co recovery for typical ore-grade material.

Montoro Resources Inc. drilled nine shallow holes early in the year to test copper-cobalt mineralization on its Malachite property [Figure 2: 9], located 60 km west of Bathurst. The best cobalt intersection was 4.8 m grading 0.35% Co in hole M-04-04, which includes 2.8 m grading 0.51% Co (press release dated March 5, 2004). The mineralized zone is reportedly in a rhyolite unit. However, recent bedrock mapping has shown that this "rhyolite" is actually a highly altered sedimentary rock and that the alteration system is much larger than previously thought.

Industrial Mineral Exploration

During 2004, industrial mineral exploration and new development opportunities were being pursued in northwestern, east-central, and various parts of southern New Brunswick. A preliminary assessment of potential Crown land slate resources from parts of Madawaska and Restigouche counties [Figure 2: 27] was undertaken by TerrAtlantic Engineering Limited on behalf of DNR's Geological Surveys Branch. In southern New Brunswick, Ketepec Development Ltd. completed a detailed assessment of its limestone and dolomite holdings [Figure 2: 28], 5 km west of Saint John. This work included detailed mapping and sampling followed by a five-hole diamond drilling program.

Potash Corporation of Saskatchewan Inc. (NB Division) conducted a 44 km² three-dimensional seismic program south and southeast of its current mining operation near Penobsquis in southern New Brunswick [Figure 2: 29]. Early in 2005, five surface exploration drill holes and a follow-up airborne EM survey are planned, key elements in continued investigations surrounding a new potash orebody discovered a few years ago during natural gas exploration activities in the area.

The Geological Survey of Canada, Saint Mary's University and the University of New Brunswick carried out a joint geoscience program on the Cretaceous silica sand-clay deposit near Cassidy Lake, south of Sussex [Figure 2: 30]. The program included drilling and a multifaceted geophysical survey utilizing seismic reflection and experimental seismoelectric methods. The objective of this investigation is to establish a suitable geologic model to assist in the development of the Cassidy Lake deposit and help identify similar Cretaceous sites elsewhere in New Brunswick. In southwestern New Brunswick interest has also been shown in marketing bedrock aggregate resources and related construction materials.

MINES AND QUARRIES

Production Statistics

The 2004 value of mineral production (including coal) in New Brunswick is estimated to be \$759 992 409, representing an increase of 8% over the final value of \$702 495 649 in 2003 (Table 5). The increase was due to a jump in the prices of both base metals and potash. The value of the Canadian dollar, at US 76.98 ¢, was almost 8% higher than in 2003, when it averaged US 71.58 ¢. The strengthening of the currency partly offset a rising trend in commodity prices.

The value of metals production during the year was \$502 336 982, up 12% from 2003. The metals sector represents 66% of the Province's value of mineral production. CanZinco's Caribou mine remained shut down for the sixth full year after low metal prices and metallurgical difficulties had forced a suspension of operations in August 1998. Noranda's Brunswick mine remained the Province's sole metals producer, although production of the principal metals (zinc and lead) was down from the record levels of the previous year. As always, zinc dominated the metals sector, with a value of \$332 475 355, representing 66% of the total value of metals. The value of zinc production increased by approximately 2% from 2003. The average zinc price increased by 27% between 2003 (37.54¢/lb. [U.S.]) and 2004 (47.53¢/lb. [U.S.]), but the continued appreciation of the Canadian dollar was a significant offsetting factor. Lead production fell by almost 6%, but the price increased by more than 72% (40.21¢/lb. [U.S.], up from 23.36¢/lb. [U.S.] in 2003). Copper production was lower by 15%, but this was more than offset by a price increase of 61% (130.0¢/lb. in 2004 vs 80.7¢/lb. in 2003) for a total value of \$29 467 151. Antimony, bismuth, and cadmium continued to be produced as by-products from the Brunswick operation. The total value of the three by-product metals increased (by almost 19%), mainly because of a substantial increase in bismuth production. A small drop in the

Table 5. Mineral Production in New Brunswick, 2003 (F) and 2004 (P)
(Source: Natural Resources Canada)

Commodity	Unit	2003 Final		2004 Preliminary	
		Quantity	Value (\$)	Quantity	Value (\$)
<i>Metals</i>					
Antimony	kg	*	*	*	*
Bismuth	kg	135 454	1 158 674	178 596	1 675 766
Cadmium	kg	134 339	243 557	99 866	153 594
Copper	kg	9 294 455	22 334 575	7 862 100	29 467 151
Gold	g	*	*	*	*
Lead	kg	72 914 212	52 571 147	68 833 199	79 777 678
Silver	kg	192 589	42 614 685	194 583	54 471 303
Zinc	kg	278 205 590	<u>324 387 718</u>	245 369 266	<u>332 475 355</u>
TOTAL			447 660 580		502 336 982
<i>Nonmetals</i>					
Marl	t	*	*	*	*
Peat	t	464 987	55 578 928	404 212	50 781 530
Potash	t	*	*	*	*
Quartz (silica)	t	*	*	*	*
Salt	t	*	*	*	*
Sulphur (in smelter gas)	t	60 861	<u>2 792 922</u>	65 392	<u>3 982 352</u>
TOTAL			182 564 315		193 188 761
<i>Fuels</i>					
Coal	t	141 000	<u>17 082 000</u>	90 000	<u>11 266 000</u>
TOTAL			17 082 000		11 266 000
<i>Structural Materials</i>					
Lime	t	*	*	*	*
Sand and Gravel	t	3 447 814	*	3 226 574	*
Stone	t	5 802 278	<u>34 590 415</u>	5 683 467	<u>32 524 490</u>
TOTAL			55 188 754		53 200 666
GRAND TOTAL (CDN)			\$702 495 649		\$759 992 409

*confidential information

GRAND TOTAL 2002 (CDN\$) \$653 479 214

December,
2005

amount of gold produced was more than offset by a 13% increase in the price. Silver production was practically unchanged, but the value increased on the strength of a 14% increase in the price.

The nonmetals sector of the industry contributed \$193 188 761 (25%) to the value of mineral production, a 6% increase over the revised 2003 value. The largest contributor to the value of nonmetals production is potash. Despite a small decrease in production, higher prices resulted in a net increase in the value of potash. Peat, the second largest contributor (\$50 781 530) to the value of nonmetals production, represented 26% of the sector's value. In 2004, the value of peat fell in tandem with the amount produced. Salt and sulphur in smelter gas ranked next in value of production, with quartz and marl being minor contributors to the nonmetals sector.

The value of coal produced by N.B. Coal Limited in the Minto–Chipman area was lower by 34% (\$11 266 000), as production fell by 36%.

The value of production for structural materials (lime, stone, sand and gravel) fell by 4% to \$53 200 666. Sand and gravel production was down by 6%, while stone production decreased by 2%. These commodities provide the raw materials for the construction industry in New Brunswick.

Operating Mines

Noranda Inc. – Brunswick Mine Daily ore production fell slightly (from 9836 to 9462 t/d). The reduction was caused primarily by difficulties with ore passes and a water inflow to an underground crusher area.

Zinc accounts for approximately 66% of the value of Brunswick's production. Lead, copper and silver represent most of the remaining 34%. The smelter ran uninterrupted throughout the year, apart from the planned seasonal shutdown. The smelter now operates between the months of November and June. The mine experienced a loss of production lasting more than a week as a result of an inflow of water from old mine workings to a crusher area. Overall mine employment declined from an average of 842 in 2003 to 828 in 2004. This figure comprised 772 regular staff and 56 contract employees. The company is expected to continue reducing employment levels in accordance with operational needs as older employees retire.

Suspended Operations

In 1997, *ADEX Mining Corporation* received a consultant's feasibility study for the development of the Mount Pleasant tin-indium-zinc-bismuth-tungsten deposit. The conclusions were disappointing, as the estimated capital costs were too high to justify a production decision at that time. The property remains on care and maintenance, but the rise in metal prices – particularly tin and indium – to their highest level in years generates hopes that investors might renew their interest in the property.

APOCAN Inc. Operations remain suspended at the Lake George antimony mine. Problems with the hoisting system, as well as a slumping antimony price, forced a temporary shutdown in December 1996. In the past year a curtailment of production from Chinese antimony mines has caused an increase in the price to over \$3,000/t. If this price can be sustained, there may be an opportunity for the company to resume operations.

Caribou Mine Division of CanZinco Ltd., a wholly owned subsidiary of Breakwater Resources Ltd. commenced production from its two properties in mid-1997, with the first ore going through the mill in July.

As part of the 1997 operating plan, the Caribou concentrator was extensively modified and expanded. It was redesigned to produce separate zinc and lead concentrates, rather than a bulk concentrate as had been the case in 1990, when it last operated. Surface preparation of the Restigouche open pit began in the fall of 1996. The first ore was produced in the spring of 1997. All ore from the Restigouche site was trucked to the Caribou mine site for processing.

Operations were suspended in September 1998 because of low metal prices and difficulties in achieving target mill recoveries.

In October 2004 it was announced that a junior mining company, Forest Gate Resources Inc., had entered into negotiations with Breakwater with a view to purchasing the Caribou and Restigouche properties. Contingent on agreement with Breakwater and the securing of regulatory approvals, Forest Gate plans to reopen the two mines in 2006 under the management of a newly-formed subsidiary, Blue Note Metals Inc.

HYDROCARBON EXPLORATION AND DEVELOPMENT

Oil and Natural Gas Activities

In November 2003, **Corridor Resources Inc.** (CRI) undertook a 30 km² 3-D reflection seismic program in the McCully field area, followed in February 2004 by delineation well N-57-2425/K-57, north of the discovery well. This latest well, licensed for 2560 m is the eighth well drilled at McCully. In June, an independent reserves report, combining geology, reservoir engineering and economics, conducted by APA Petroleum Engineering Ltd. and Petrel Robertson Consulting Ltd., both of Calgary, estimates the current ultimate gas recovery for the portion of the field encompassing the McCully A-67, P-66, K-57 and D-48 wells to be 18 billion cubic feet (bcf). In the last quarter CRI applied for and was granted an amended well licence to re-enter N-57 well to deepen the well from the original bottom-hole depth (BOD) of 2560 m to a licensed depth of 3530 m. CRI and partner Potash Corporation of Saskatchewan Inc. (PCS) continued natural gas production from their discovery wells A-67 and P-66 near Sussex. The gas production, about 2 MMcf/d is being delivered by pipelines to a gas plant where it is processed prior to fuelling PCS's potash mill.

Columbia Natural Resources Canada, Ltd. (CNRC), the other major exploration player in the Province undertook a gravity and geochemical survey in June 2004 to satisfy work commitments on Marysville and Cocagne basins licences.

The Department of Natural Resources established a posting schedule for sale of New Brunswick's oil and natural gas rights in the last quarter of 2003. The establishment of this schedule will alert the oil and gas industry and interested parties of closing dates for nominations, sale date notice and sale closing dates.

Call for Tenders notices #18 ONG 01-04 with closing date February 10, 2004 and #19 ONG 03-04, with closing date October 26, 2004, resulted in the sale of a total of six licences to search. The six parcels are located in Albert and Westmorland counties in grid areas 2327 and 2328 south and southwest of Moncton. The sale resulted in the awarding of five licences to search to **Contact Exploration Ltd.** (CEL) of Calgary and one licence to search to PetroWorth Resources Inc. of Toronto. In the last quarter CEL was granted a well licence for a location in the Dover field. The shallow 564-metre Contact MBA Gautreau F-59-2328 well is slated to be spudded in the first quarter of 2005.

Bituminous Shale

There were no bituminous shale agreements in effect for the report period.

Underground Storage

Companies holding underground storage exploration licences continued to assess their agreement areas without undertaking on-the-ground drilling and seismic exploration activities.

Oil and natural gas, underground storage and bituminous shale agreement areas are shown in Figure 2 (31-45).

Conferences

Three staff presented a poster display and gave a talk at the NAPE conference in Houston (Texas) promoting oil and gas exploration opportunities in the New Brunswick basin.

PEAT

The Peat Resources Geologist, Jacques Thibault, is responsible for managing the peat resources of the Province and for monitoring activities on 43 industrial peat leases. The peat resources geologist coordinates the peat lease application process. He also compiles statistics on the sector and provides expert advice to government, industry and the public in general.

The Province of New Brunswick is the principal peat-producing area of Canada with about 35 % of the national output. In New Brunswick, peat is defined as a quarriable substance and belongs to the landowner. Most peatlands with commercial potential occur on Crown lands, which explains why the provincial government plays a major role in the administration of that resource. The current focus of the Province's peat development strategy is on resource allocation and restoration of abandoned commercial peat operations.

The 2004 season got off to a good start with a very dry month of May. Approximately 20% of the production was done. The vacuums were in the fields from mid-May. A cool and rainy June slowed down production, but by mid-July about 50% of the production had been harvested.

In August, the *Quarriable Substances Act* and Regulations were amended to allow for the implementation of the 2001 policy and the new rules concerning the reclamation of former mining sites.

Conferences / Workshops

In July 2004, the Minister toured the peat industry to familiarize himself with the topical issues relating to this natural resources sector.

ISSN 0708-1464
ISBN 1-55396-373-3
Price. \$2.00